UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/654,997	09/05/2003	Kazuto Ikemoto	396.43046X00	6686

20457 7590 11/03/2005

ANTONELLI, TERRY, STOUT & KRAUS, LLP
1300 NORTH SEVENTEENTH STREET
SUITE 1800
ARLINGTON, VA 22209-3873

EXAMINER	
DELCOTTO, GREGORY R	

ART UNIT	PAPER NUMBER
1751	

DATE MAILED: 11/03/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/654,997	IKEMOTO	
	Examiner	Art Unit	
	Gregory R. Del Cotto	1751	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *15 August 2005*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *3-18* is/are pending in the application.

4a) Of the above claim(s) *12* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *3-7,10,11 and 13-18* is/are rejected.

7)☒ Claim(s) *8 and 9* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1. Claims 3-18 are pending. Applicant's amendments and arguments filed 8/15/05 have been entered.

Applicant's election of Group I, claims 1-11, in the reply filed on 8/15/05 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).

Claim 12 is withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on 8/15/05.

Objections/Rejections Withdrawn

The following objections/rejections set forth in the Office action mailed 2/14/05 have been withdrawn:

The rejection of claims 1-11 are rejected under 35 U.S.C. 112, first paragraph, has been withdrawn.

The rejection of claim 1 under 35 U.S.C. 102(e) as being anticipated by Carter et al (US 2004/0152309) has been withdrawn.

The rejection of claim 1 under 35 U.S.C. 102(b) as being anticipated by Castelhano et al (US 6,037,472) has been withdrawn.

The rejection of claims 1 and 11 under 35 U.S.C. 102(b) as being anticipated by WO 99/23667 has been withdrawn.

Priority

Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Claim Objections

Claims 3-6 are objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form.

With respect to claims 3 and 6, these claims fail to further limit the weight percent of alkaline compound and organic solvent, respectively. Claims 4 and 5 are also rejected due to their dependency on claims 3 and 6, respectively.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.
>
> (e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting directly or indirectly from an international application filed before November 29, 2000. Therefore, the prior art date of the reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 1-6, 10, 11, and 13-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Carter et al (US 2004/0152309).

Applicant cannot rely upon the foreign priority papers to overcome this rejection because a translation of said papers has not been made of record in accordance with 37 CFR 1.55. See MPEP § 201.15.

Carter et al teach a method of polishing a silicon-containing dielectric layer involving the use of a chemical-mechanical polishing system comprising an inorganic abrasive, a polishing additive, and a liquid carrier, wherein the polishing composition has a pH of about 4 to about 6. The polishing additive comprising a functional group having a pKa of about 4 to about 9 and is selected from the group consisting of arylamines, aminoalcohols, aliphatic amines, heterocyclic amines, hydroxamic acids, aminocarboxylic acids, etc. See Abstract. Suitable aminoalcohols include triethanolamine, hydroxylamine, etc. See para. 21. The hydroxamic acid can be formohydroxamic acid (N-hydroxyformamide), acetohydroxamic acid, etc. See para. 24. The polishing composition further comprises an alcohol such as methanol, ethanol, or propanol. See para. 36. Ph adjusters may also be used in the compositions and include sodium hydroxide, potassium hydroxide, etc. See para. 34. The liquid carrier is typically water. See para. 33.

Carter et al do not teach, with sufficient specificity, a cleaning composition containing a N-hydroxyformamide, an alkaline compound, solvent, water, and the other requisite components of the composition in the specific proportions as recited by the instant claims.

It would have been obvious to one of ordinary skill in the art, at the time the invention was made, to formulate a cleaning composition containing a N-hydroxyformamide, an alkaline compound, solvent, water, and the other requisite components of the composition in the specific proportions as recited by the instant claims, with a reasonable expectation of success and similar results with respect to

other disclosed components, because the broad teaching of Carter et al suggest a cleaning composition containing a N-hydroxyformamide, an alkaline compound, solvent, water, and the other requisite components of the composition in the specific proportions as recited by the instant claims.

Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Carter et al (US 2004/0152309) as applied to claims 1-6, 10, 11, and 13-18 above, and further in view of Miller et al (US 2002/0177316).

Carter et al are relied upon as set forth above. However, Carter et al do not teach the use of a corrosion inhibitor in addition to the other requisite components of the composition as recited by the instant claims.

Miller et al teach a copper polish slurry, useful in the manufacture of integrated circuits in generally, and for chemical-mechanical polishing of copper and copper diffusion barriers particularly, may be formed by combining a chelating, organic acid buffer system such as citric acid and potassium citrate; and an abrasive, such as colloidal silica. See Abstract. Alternatively, copper polish slurries, in accordance with the present invention, may be formed by formed by further combining an oxidizer, such as hydrogen peroxide, and/or a corrosion inhibitor such as benzotriazole. See Abstract.

It would have been obvious to one of ordinary skill in the art, at the time the invention was made, to use a corrosion inhibitor such as benzotriazole, in the chemical-mechanical polishing slurry as taught by Carter et al, with a reasonable expectation of success, because Miller et al teach the use of a corrosion inhibitor such as benzotriazole in a similar CMP composition and, further, corrosion inhibitors are

desirable and notoriously well-known additives included in compositions which contact metal substrates.

Response to Arguments

With respect to Carter et al, Applicant states that Carter et al discloses a chemical-mechanical polishing composition including an inorganic abrasive and that Carter et al does not disclose or suggest a cleaning composition adapted for removing photoresists from a substrate as recited by the instant claims. Additionally, Applicant states that the inclusion of an inorganic abrasive in the composition of Carter et al would have taught away from a composition used for cleaning photoresists. In response, note that, "for removing photoresists from a substrate" as recited by the instant claims is merely an intended use of the composition and not a patentable limitation. If the body of a claim fully and intrinsically sets forth all of the limitations of the claimed invention, and the preamble merely states, for example, the purpose or intended use of the invention, rather than any distinct definition of any of the claimed invention's limitations, then the preamble is not considered a limitation and is of no significance to claim construction. See MPEP 2111.02. Furthermore, the Examiner asserts that "comprising" as recited by clam 13 would not exclude the inclusion of an inorganic abrasive. Additionally, the Examiner asserts that "consisting essentially of" as recited by instant claim 14 would not exclude the presence of abrasive since Applicant has provided no statement in the specification nor provided any evidence showing that abrasives would materially or detrimentally affect the claimed composition.

With respect to Miller et al, Applicant states that Miller et al is not combinable with Carter et al since Carter is directed to polishing silicon materials and Miller is directed to polishing copper. In response, note that, Miller et al is a secondary reference relied upon for its teaching of corrosion inhibitors; the Examiner maintains that one of ordinary skill in the art would be motivated to use the corrosion inhibitors taught by Miller et al in the composition taught by Carter et al, with a reasonable expectation of success, because Miller et al is drawn to similar polishing compositions in general containing corrosion inhibitors and corrosion inhibitors are desirable due to direct or indirect contact with metallic surfaces. Note that, Carter teaches that the substrate can comprise a secondary layer which may be metal and be subject to potential corrosion. See para. 38.

Also, with respect to the comparative data presented in the specification, Applicant states that this data shows the unexpected and superior results, with respect to cleaning and corrosion, of the claimed invention in comparison to those compositions falling outside the scope of the instant claims. Note that, the Examiner maintains that this data is not persuasive because the data is not commensurate in scope with the instant claims. For example, the Examples show compositions containing at most 15% by weight N-hydroxyformamide while the instant claims recite an upper limit of 60% by weight.

Allowable Subject Matter

Claims 8 and 9 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

None of the references of record, alone or in combination, teach or suggest a composition containing the specific polyamine in addition to the other requisite components of the composition as recited by the instant claims.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Gregory R. Del Cotto whose telephone number is (571) 272-1312. The examiner can normally be reached on Mon. thru Fri. from 8:30 AM to 6:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Yogendra Gupta can be reached on (571) 272-1316. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Gregory R. Del Cotto
Primary Examiner
Art Unit 1751

GRD
January 31, 2005